

ABSTRACT OF THE DISCLOSURE

A holding plate for selectively heating and cooling samples in a solution has two opposing surfaces, and a plurality of cylindrically-shaped through-hole wells for holding the samples. Each well extends between the two surfaces of the holding plate, and has an aspect ratio of greater than 5:1, and a diameter less than approximately 500 microns. A metallic coating is applied by vapor deposition techniques on a surface of the holding plate. Importantly, this coating extends into each well through a distance of approximately one and a half well diameters for contact with the solution and the samples. A heat transfer device is thermally connected to the metallic coating for selectively heating and cooling the samples in the wells of the holding plate.

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